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TECHNOLOGY DEPT

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE • NOVEMBER 6, 1943



Inhaling Immunization

See Page 297

A SCIENCE SERVICE PUBLICATION

Do You Know?

A five-mile *tunnel* has been completed in southern Lebanon, Asia, to irrigate 7,000 acres with water from the Litani river.

Broom corn is being imported from Argentina to relieve critical shortages in the United States broom industry until the native crop is harvested late this year.

Rayon garments have four principal *insect enemies*: silver fish, cockroaches, crickets and carpet beetles; ordinary household insect sprays and powder are protections.

A new serious *turkey disease* is caused by one-celled animal parasites called trichomonads; clean ranges, foods rich in vitamin A, and doses of gentian violet are recommended for control.

Milkweed floss for use in Navy life preservers and life jackets is now processed at a new plant at Petoskey, Mich., the first milkweed floss plant in the world; its daily capacity is 25,000 pounds.

Italy in 1902 took up the manufacture of *quinine* and its sale at a low price; in a five-year period sales increased ten-fold and deaths from malaria decreased from over 13,000 in 1901 to less than 5,000 in 1907.

Seven southwestern states have over 4,000,000 *goats*; they supply leather for shoes and gloves, mohair or goat wool for fabrics, milk for children and adults, and meat widely used and highly recommended.

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Most articles which appear in SCIENCE NEWS LETTER are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.

An enormous bed of 98% pure *salt* has been located in northern West Virginia at 6,300 feet below the surface; it is estimated to extend over some 2,400 square miles, and to be about 100 feet thick.

Burmese natives have asked the Army to use colored fabrics in *parachutes* which drop food and supplies to troops on the Burmese frontier; they use the discarded cloth for clothing and are tired of white.

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MEDICINE

Sulfa Relieves Colds

New sulfa drug combining sulfathiazole with ephedrine compound shortens duration, and sulfadiazine spray prevents complicating infections.

► A NEW sulfa drug that brings prompt relief in colds and seems to shorten their duration, and the prevention of ear and sinus infections after a cold by a different sulfa drug used as a nose and throat spray are announced. (*Journal, American Medical Association*, Oct. 30)

The new sulfa drug is desoxyephedronium sulfathiazole and is made by combining sodium sulfathiazole with an ephedrine compound of the type used to shrink the swollen nasal membranes during a cold. It is announced by Dr. Frederick Myles Turnbull, Dr. William F. Hamilton, Eli Simon and Melvin F. George, Jr., of the Lockheed Aircraft Corporation Research Laboratory at Burbank, Calif.

The prevention of ear infection, sinusitis, sore throat, laryngitis and coughs following colds by the sulfadiazine spray originally developed to fight infection in severe burns is reported by Dr. David A. Dolowitz, Dr. Walter E. Loch, Dr.

Henry L. Haines, Dr. Arthur T. Ward, Jr., and Dr. Kenneth L. Pickrell, from the Johns Hopkins Hospital, Baltimore.

The number of nose and throat complications of the common cold are steadily decreasing, the Hopkins doctors point out, because so many family doctors and child specialists are giving sulfa drug pills for every acute infection of the nose and throat.

One objection to giving large doses of sulfa drugs by mouth for an infection in one part of the body is that almost a third of the patients develop nausea, dizziness, fever, skin rash or more serious trouble as a result of the drug. They believe it better to apply the sulfa drug directly to the infected nose and throat, just as sulfa drugs are applied directly on wounds and burns to fight infections of them.

Twenty-four-hour recoveries of patients with red, swollen throats and constitutional symptoms followed the use

of the sulfadiazine spray in many cases when the sore throat was due to beta hemolytic streptococcus infection following a cold, the Hopkins doctors report.

Other streptococcus germs and pneumonia germs do not disappear so quickly from the throat, but apparently lose their virulence or ability to become virulent, judging from the clinical symptoms. It is these streptococcus and pneumonia germs and other bacteria which prolong a cold and cause lost time from work and the more serious complications.

In a group of nurses who were given the spray as soon as they reported to the infirmary with a cold, only 9.7% developed sinusitis, compared with 30% in a control group not given the sulfa spray. The sprayed group developed coughs in 8% and ear trouble in 1.8% but no laryngitis and no sore throats. In the control group, 44% developed coughs, 10% sore throat, 2.3% laryngitis and 4.5% ear trouble.

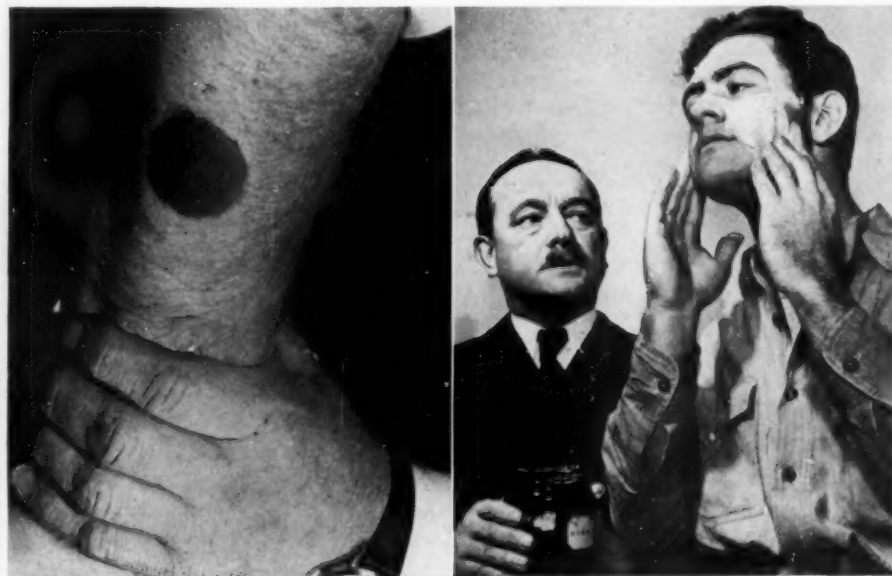
The nose and throat spraying was done eight to 12 times a day for three days, and five to eight times a day for two or three days more.

The new sulfa drug announced by the Lockheed scientists was used on cotton as a nasal pack and also as nose drops and spray. Combining the ephedrine compound with the sulfa drug reinforces the effect of the ephedrine in shrinking the swollen nasal membranes. The sulfa drug gets farther into the nose and sinuses, and less of the ephedrine need be used. This has the advantage of avoiding the sneezing, sleeplessness, nervousness and heart palpitation which sometimes follow the use of ephedrine alone in nose drops.

More than 1,000 cases of nose, throat and ear infections have been treated with the new drug. In acute colds, it "resulted in rather prompt relief and the duration of the infection was apparently shortened. This was also true in acute sinusitis with less tendency to become subacute or chronic," the Lockheed scientists report.

Many patients with chronic sinusitis were helped who otherwise would have had to have an operation. Acute ear trouble was a much less frequent complication.

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FLASH-BURN CREAM—A cream which will protect men in the armed forces against the milder forms of flash-burn has been developed by Lt. Comdr. Gordon B. Fauley, U.S.N.R., after four months of experimentation. Such burns are now one of the most important causes of casualties, particularly during naval battle. Lieutenant Commander Fauley shows his own arm (left) burned by a laboratory-made flash-burn, and (right) shows an enlisted man how to daub on the protective cream.

PLANT PHYSIOLOGY

Plant Sex Activity Speeds-Up Life Processes

► SEX ACTIVITY in plants causes a speed-up in the general non-sexual portions of their life processes, researches by

Prof. A. E. Murneek and Dr. S. H. Wittwer at the University of Missouri have shown. This speed-up has been detected and measured in numerous ways: over-all increase in size, added weight in solid substances, intake of food materials from the soil, and more lately increases in enzyme activity and growth hormone production.

In one group of experiments, extracts of immature corn kernels, in which effects of the reproduction process were still highly active, were applied to unpollinated tomato flowers. They caused the formation of fruits, and were materially much more effective in doing so than either artificial pollination or the use of synthetic growth substances.

MEDICINE

Caudal Analgesia Results

Reports of first 10,000 mothers given new childbirth anesthetic published; doctors say it can give complete relief with absolute safety.

► THE EXPERIENCES of the first 10,000 mothers given the new method of relieving childbirth pains, continuous caudal analgesia, in North American hospitals and medical schools are reported by the originators of the method, Dr. Robert A. Hingson and Dr. Waldo B. Edwards, of the U. S. Public Health Service. (*Journal, American Medical Association*, Oct. 30)

Of the 10,000, four mothers and two babies died. Complete relief of pain was secured in 8,100, partial relief in 1,200. There were 700 cases considered as failures. These results are almost identical with those obtained in 1,150 cases treated by Dr. Hingson and Dr. Edwards themselves.

The method consists essentially in blocking certain pain nerves by injecting chemical into the caudal space, somewhat as a dentist uses a local anesthetic to banish the pain in pulling a tooth. The mother remains awake but does not feel any pain and is perfectly comfortable during the childbirth. The babies are "just as alert and wide awake at birth as those born to mothers who had no form of sedation or anesthesia."

The Public Health Service surgeons are convinced the method will give complete relief of pain to the mother "with absolute safety to her and her baby, provided the procedure is supervised by a specially trained person.

"We have found," they state, "that

There are two high points in this cycle of life-process stimulation during sexual reproduction, Professor Murneek and Dr. Wittwer determined. One comes immediately after the chromosomes in the sex cells have clustered together as a preliminary to their breaking apart into two groups to lay the foundations of new cells. The other high point comes after the pollination of the flower, and follows the approach and fusion of sperm and egg cells to begin the formation of the embryo plants within the future seeds.

A resume of the work of the Missouri botanists appears in *Science*. (Oct. 29)

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the ideal person for this responsibility is an obstetrician who has been fundamentally trained in the specialized form of anesthesiology."

More operative procedures, such as the use of forceps, and more cases in which the baby does not spontaneously turn to the best position for birth occur with this method of analgesia but to offset these disadvantages, the doctors state, operative procedures can be done more easily because of the relaxation which is greater than with any other form of general anesthesia.

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METALLURGY

Zirconium Dangerous Metal When in Powdered Form

► ZIRCONIUM, rare and costly metal used in ammunition primers, is a dangerous metal in its powdered form, the U. S. Bureau of Mines has warned.

A cloud of it may ignite spontaneously and explode at ordinary room temperature, whereas other metallic dusts rated as highly explosive need temperatures much higher to set them off. Government engineers recommend that the metal be used only as a sludge or in special containers.

One of the so-called minor metals, zirconium is used also in war-essential flashlight bulbs, radio tubes and welding

rods, as well as in porcelain enamels and pottery glazes.

In pre-war days some 20,000 tons of zirconium were used each year in the United States. Part of the supply was obtained in Florida and California, but considerably more was imported from Australia and Brazil.

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METEOROLOGY

New Device Tells Exact Hour It Rained or Snowed

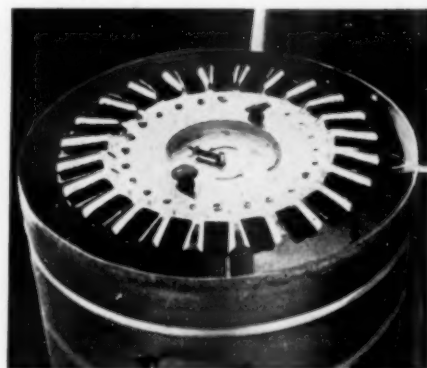
► NO LONGER will the weatherman have to be eternally on the lookout to record the exact hour when rain or snow fell. A new precipitation recorder has been devised to take care of this detail for him.

The new instrument consists of twenty-four glass plates that have been smoked on one side. Each hour, one glass plate is exposed to a slot in the top of the instrument through which whatever precipitation there might be would fall.

The time and amount of any kind of precipitation are important since the forecasting of floods and climatic conditions depends on this information.

The only one of its type in the world, this recorder is now in use at the Pennsylvania State College. The new instrument, called a Pluvio-chronograph, after the Greek word meaning "time recording rain gauge," was invented by Dr. Hans H. Neuberger, head of the Geophysical Laboratory at the college.

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RAIN INDICATOR—This instrument, the Pluvio-chronograph developed at the Pennsylvania State College, is pictured with the top removed to show its smoked glass plates. The wheel turns a notch each hour to expose a new plate to rain or snow coming through the slot in the cover.

MEDICINE

Prevention for Rabies

When a person is bitten by a dog that may be rabid, the bite may be treated with soap solution instead of the painful fuming nitric acid.

► **SOAP SOLUTION** may substitute for fuming nitric acid as part of the preventive treatment of rabies in the future, if physicians follow the lead of experiments reported by Dr. Howard J. Shaughnessy and Dr. Joseph Zichis, of the Illinois Department of Public Health. (*Journal, American Medical Association*, Oct. 30)

Recommended procedure at present, when a person is bitten by an animal having or suspected of having rabies, is to cauterize the wound as soon as possible with fuming nitric acid. If it is known that the biting animal had rabies, Pasteur treatment is then given, but if there is doubt about the diagnosis of rabies in the animal, the Pasteur treatment may not be given.

The cauterization of the wound with fuming nitric acid is painful, healing afterward is usually slow and there may be severe scarring. For these reasons, the health authorities point out, many physicians hesitate to use the nitric acid.

So they investigated other possible methods of preventive treatment of the bite.

In experimental rabies in guinea pigs, they found, irrigating, or thoroughly washing out, the wound with a 20% solution of soft soap "is just as effective as chemical cauterization with nitric acid, and possibly even more effective."

The wounds healed in about half the time and there was less scarring than when nitric acid was used. Tincture of iodine and sulfanilamide were also tried. The sulfanilamide did not help in preventing rabies and the iodine was not as effective as the nitric acid or the soap solution.

Speed in treating the wound or bite is important, the studies showed. Treatment with either nitric acid or soap solution was only about two-thirds as effective in preventing rabies when applied six hours after the wound or bite as when applied after 30 minutes or even two hours.

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ASTRONOMY

Lost Comet Found

Comet d'Arrest, missing since 1923, is found far south of the celestial equator. It is too faint to be visible without a telescope.

► A COMET lost for the past 20 years has been found by Dr. George Van Biesbroeck, Yerkes Observatory astronomer observing at McDonald Observatory in southwestern Texas. It is comet d'Arrest, not seen since 1923, which inadvertently helped amateur astronomer Leslie C. Peltier of Delphos, Ohio, find comet Diamaca last month. Dr. Van Biesbroeck himself had asked Mr. Peltier to look for comet d'Arrest, and it was just after giving this up as a hopeless task that Mr. Peltier picked up the Diamaca comet. (*See SNL*, Sept. 25)

In a wire to Harvard College Observatory, Dr. Van Biesbroeck gives the magnitude of comet d'Arrest as twelfth, making it too faint to be visible with-

out telescopic aid, hence of interest only to professional astronomers.

Its position, when located, was so far south of the celestial equator that Mr. Peltier's inability to find it is not surprising. From McDonald Observatory, however, the comet appeared much higher in the southern sky, a fact which must have facilitated Dr. Van Biesbroeck's re-discovery.

Inasmuch as the orbit of comet d'Arrest had long since been predicted, astronomers knew fairly well where to look for it, but it appears to have passed close to the sun about two days ahead of schedule.

At the request of Dr. Van Biesbroeck, comet expert of Yerkes Observatory,

Williams Bay, Wis., the Delphos, Ohio, amateur had spent several evenings in search for comet d'Arrest, lost since 1923. When his search appeared fruitless, Mr. Peltier resumed his regular program of comet seeking on the night of Sept. 18, with fortunate results. Half an hour after he stopped looking for comet d'Arrest he observed a faint, ill-defined object in the constellation of Draco.

Five minutes of watching through his telescope clearly showed the motion of this comet, a new one for Mr. Peltier, although it had been discovered by Diamaca, a Rumanian, some nine days earlier. However, Mr. Peltier's find was extremely important, as he was the first American to see the comet since news of its discovery had been received at Harvard several days earlier. It is possible that he made the only observations of the comet from the Western Hemisphere, for he reports that by Sept. 22 its magnitude had dropped from tenth to thirteenth, making it very difficult to locate.

Mr. Peltier states that the Diamaca comet was somewhat brighter at the center but without any suggestion of nucleus or tail.

Mr. Peltier's observations confirmed the path of the comet as indicated by the original discoverer, although its motion was exceedingly rapid. This, and the rapid fading of its light, explain why the comet proved so elusive. However, European astronomers observed it well enough for an orbit to be computed. From this it appears that the comet is already on its way out into the depths of space, having passed nearest to the sun on Aug. 21.

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ORDNANCE

Rocket Jets to Give Bomb Greater Velocity Patented

► TO GIVE greater downward velocity to a bomb than it can ever gain from the pull of gravity, W. F. Rouse, of Havelock, Iowa, proposes a series of rocket jets in its tail, to be ignited by the spin of a propeller-like safety device after the missile has fallen well clear of the launching aircraft. "Upside down" rocket bombs of this general type were reported in use by the Germans some time ago, but this is the first emergence of such a weapon as an American invention. Patent 2,332,670 has been issued to Mr. Rouse.

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GENERAL SCIENCE

Science Scholarships

Third Annual Science Talent Search announced; \$11,000 in educational awards and trips to Washington will be given to winning boys and girls.

▶ ANOTHER nation-wide search for young scientists is on.

Fifty thousand high school principals and science teachers have been asked to help locate the 40 boys and girls in the United States who show most promise of becoming scientists.

Westinghouse Science Scholarships totaling \$11,000 and all-expense trips to the Nation's Capital are waiting for the 40 boys and girls who can meet the stiff requirements of the Third Annual Science Talent Search, conducted by Science Clubs of America.

"You have in your classes boys and girls who must, in coming years, play important roles in applying science and technology to our civilization in war and peace," the announcement by Science Service tells teachers. "We want to cooperate with you in the discovery and development of this important ability. Within the next five years, either in war or peace, boys and girls now in high school must begin to take leadership in scientific research and engineering."

More than 15,000 high school seniors in private, public and parochial schools are expected to enter. Right now they are busy writing their essays on the subject "My Scientific Project." On or after Dec. 3 they will take a two-hour Science Aptitude Examination, administered by their home-town principal or science teacher, who may obtain examination blanks from Science Clubs of America, 1719 N Street N. W., Washington 6, D. C.

After Dec. 27, when all entries must be in the offices of Science Clubs of America, a board of judges will consider carefully the records of thousands of would-be scientists. Each contestant will have submitted through his teachers, answers to a science aptitude examination; a personal data blank on which he and his faculty have listed his scholastic and extra-curricular achievements as well as his personality traits, work habits, initiative, and other qualities; and an essay of about 1,000 words on "My Scientific Project."

The 40 boys and girls who survive this gruelling competition will be invited to Washington for all-expense trips to

attend the 5-day session of the Science Talent Institute. At the end of this thrillo-packed week of study, fun and companionship with others from all over the country, the winners of the Westinghouse Science Scholarships will be named.

The need for developing the talents of scientifically-minded boys and girls is so great that the Annual Science Talent Search has rapidly become an institution and a tradition. It has been instrumental in locating and developing talent which might otherwise have been lost forever to our country.

The Westinghouse Science Scholarships make it possible each year for 40 top-flight students to attend colleges, universities and technical schools of their own choice. A total of 260 other boys and girls are named by the judges to receive honorable mention. As a result of this distinction these fortunate ones are the recipients of many scholarship opportunities offered to them directly by colleges, universities and technical schools.

The objectives of the Science Talent Search are stated as follows:

1. To discover and foster the education of boys and girls whose scientific skill, talent and ability indicate potential creative originality and warrant scholarships for their development.

2. To focus the attention of large numbers of scientifically gifted youth on the need for perfecting scientific and research skill and knowledge so that they can increase their capacity for contributing to the task of winning the war and the peace to follow.

3. To help make the American public aware of the role of science in war and in the post-war reconstruction.

Both boys and girls are eligible to enter the Third Annual Science Talent Search. The ratio of girls to boys among the 40 finalists invited to Washington for the Science Talent Institute will be the same as that of the boys and girls completing all requirements of the competition.

Two four-year Westinghouse Grand Science Scholarships of \$2,400 each will be awarded—one to a boy and one to a

girl. Eight four-year Westinghouse Science Scholarships of \$400 each and additional scholarships totaling \$3,000 more will be awarded at the discretion of the judges. During their visit to Washington each of the 40 boys and girls will be awarded the gold emblem of Science Clubs of America.

The ratio of the girls named to honorable mention will also be in proportion to the number of girls finishing all requirements of the competition.

Those nearing military service age are urged to compete in the Third Annual Science Talent Search. Boys winning scholarships will have their awards held for them until they return from war service if they are called to active duty before their college courses are completed. Many of the winners of previous years are now in the Army and Navy college programs and their awards are being held for their return to civilian life.

The distinction of being named a winner or awarded honorable mention in the Science Talent Search has made it possible for many to enter specialized training of a scientific nature upon induction into the armed services.

The examination designed especially for the Third Annual Science Talent Search is intended to test capacity for orderly thinking and other attributes necessary to scientific work rather than book learning in science.

The Science Talent Search is conducted by Science Clubs of America as one of the activities of Science Service. Awards are provided and the Science Talent Search made financially possible by the Westinghouse Electric and Manufacturing Company, a leader in scientific research, engineering and manufacture in the electrical industry, as a contribution to the advancement of science in America.

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ABBONAUTICS

Post-War Family Airplane For Over 300,000 in U. S.

▶ ONE OUT of every 500 persons in this country will have his own airplane within three years after the end of the war.

This is indicated by estimates presented to the Institute of Aeronautical Sciences by Charles B. Donaldson, CAA director of airports, who predicted that over 300,000 privately owned planes will be taking to the air at that time.

In 1941 there were only 25,000 such

airplanes. The number of automobiles licensed in the same year was over 29,000,000.

Aircraft manufacturers are planning production-line manufacture of private aircraft as their mainstay after the war, Mr. Donaldson said. Hundreds of thousands of skilled airmen are now being trained by the Army and Navy, including pilots, radiomen, mechanics, navigators, meteorologists, traffic controllers and others. After the war this huge reservoir of skilled manpower will return to civil life and a great majority of them will continue in the aviation field, where they can utilize their training and experience.

Mr. Donaldson believes that the fam-

ily plane after the war is assured, as it can be small, safe and inexpensive—in the cost range of the medium-priced automobile.

Citing the profound influence of the motor car upon the American way of life, upon our institutions, points of view, modes of recreation, business habits, city planning and our general pattern of living, Mr. Donaldson pointed out that the airplane will very likely exert another strong influence upon our future way of living in America.

To serve these private planes and the greatly increased commercial air traffic, Mr. Donaldson estimates that there will be 6,000 airports needed in this country—double the number now in existence.

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MEDICINE

Egg-Nog for Wounds

Ten per cent of Russian soldiers with belly wounds saved by milk-egg-alcohol mixture given directly into the wound. Relieves general weakness.

► LIVES of about 10 out of every 100 Russian soldiers with belly wounds have been saved by feeding a rich egg-nog through the wound while the patient was on the operating table at the battalion field hospital, P. A. Panikov, surgeon-in-chief of a medico-sanitary battalion of the Red Army, reports.

Details of the method, originally reported in the Soviet medical journal, *Khirurgia*, will be available to American doctors through a translation appearing in the first issue of a new journal, *American Review of Soviet Medicine* (Oct).

The practice of feeding through the wound was adopted to fight the general weakness which often proved fatal to these wounded soldiers on the second or third day after operation. They had survived the shock of the injury and surgical treatment. Peritonitis, a fundamental cause of death in such cases, had not set in or was developing unusually slowly.

The Soviet surgeons were forced to conclude, Dr. Panikov reports, that the weakened resistance of these wounded soldiers "was the result of the stubborn, unyielding battles of the time, battles which did not permit the organism (body) the required rest or allow the soldier to have sufficient nourishment on time. All this was aggravated by the soldier's prolonged stay on ice and in snow-covered trenches."

For some time after an abdominal

wound and repair operation, the patient can eat little or nothing. So the Soviet surgeons decided to forestall the further weakening effect of this period of forced starvation or semi-starvation by putting some food into the intestines through the wound at the time of operation. The food consisted of almost 13 ounces of milk, about two ounces of sweet butter, two eggs, about two ounces of sugar, a little salt and about two ounces or more of distilled alcohol.

The good effect of this feeding sometimes could be seen before the patient left the operating table. Color returned to the cheeks, the lips became red and warm, and the patients generally fell asleep at the end of the operation. There was much less pain following the operation and the patients usually wanted to eat by the third or fifth day. On the ninth or tenth day, the patients could be evacuated in good condition to regimental field hospitals.

This method reduced the mortality from abdominal wounds to 40% or less, where previously it had never been below 50%. The extreme difficulties of transportation, both of wounded soldiers from the front to the battalion field hospitals and of plasma and other medical and surgical supplies from the rear to these hospitals, apparently account for some of the high mortality rate.

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PUBLIC SAFETY

Two Main Reasons Given For Winter Car Accidents

► LOW VISIBILITY and slippery roads were the primary causes of the high mileage death rate last winter from automobile accidents on highways.

This is the conclusion of Prof. Amos E. Neyhart, of Pennsylvania State College faculty, who is administrative head of the Institute of Public Safety. He urges that proper protective steps be taken now as the primary use of cars and trucks today is directly or indirectly in war work.

The mileage death rate last winter was 24% greater than the summer toll, he finds from a study of road accidents and their causes. This figure applies only to the states in the snow-belt; in the snow-free southern states the winter mileage death rate exceeded the summer rate by only 5%.

The remedies suggested include proper headlights, necessary because of shorter days; clean, clear windshields equipped with efficient wipers and defrosters, and non-skid tires or tires equipped with non-skid devices. Careful driving at low speeds is also essential.

Science News Letter, November 6, 1943

PSYCHOLOGY

Non-Artists Agree Well On Colors in Spectrum

► ORDINARY PERSONS who are not artists agree quite well on where one color in the rainbow begins and another ends, whereas artists and psychologists, more familiar with color, differ among themselves, Lieut. Dean Farnsworth, U.S.N., reported to the Optical Society of America meeting in Pittsburgh.

Four hundred persons of various ages, occupations and educational backgrounds were shown a continuous spectrum by Lieut. Farnsworth and asked to divide it into colors. Some saw three, some four, five or six colors in the spectrum, but their agreement on the boundaries between colors was astonishing. When the color experts took the same test the agreement was much poorer, probably because the experts had preconceived ideas on the subject and were more individualistic in their division of the colors. Lieut. Farnsworth suggested that for commercial, scientific and educational fields the spectral regions determined by this experiment should be used because they are generally acceptable to the layman.

Science News Letter, November 6, 1943

PHARMACY

Quinine Pool Project Yields 6,500,000 Doses

► THE NATION'S stockpile of quinine, potent and in some cases preferred weapon against malaria, is richer by more than 6,500,000 doses of 10 grains each since the National Quinine Pool project closed its books after Pharmacy Week, officials of the American Pharmaceutical Association announced.

The pool was started last February as a cooperative project between the association and the Defense Supplies Corporation. The largest single contribution was 100 pounds of pure quinine sulfate, sent by the president of Peru and turned over to the pool by President Roosevelt. Most of the contributions, however, came from retail pharmacists all over the United States.

The quinine came in many different compounds and many different containers. Those with unbroken seals were forwarded to the armed forces as received. All others were emptied into barrels and sent to a chemical refinery for reprocessing to assure complete purity.

Science News Letter, November 6, 1943

NUTRITION

Calories Flavor Main Value of Jams, Jellies

► THE FACT that jams, jellies, preserves and fruit spreads are now rationed should not cause any worry on the nutritional score. The chief contributions these foods make to the diet are the flavor and general appetite appeal they may give to bland foods and the calories their high sugar content furnishes.

So far as calories are concerned, nutritionists teach that it is far better to get these from foods that supply vitamins, minerals and protein along with the calories for energy. Such foods are cereals, bread, potatoes, meat and legumes such as dried peas and beans. Fat is another good source of calories which also contributes nourishment in other ways.

Jams, jellies and the like are made from fruit, but they are not a good substitute for fresh fruit, as are canned and dried fruits. Canned and dried fruits retain some if not all of the vitamins of the fresh fruits. Jams and jellies have a completely blank score for vitamins, according to a table of the vitamin values of foods prepared by home economists of the U. S. Department of Agriculture.

If you have ever made jam or jelly,

you know how much sugar goes into them. This added to the sugar originally in the fruit is what gives these sweet spreads their high caloric content. You get about two and one-half times as many calories from a little over three ounces of jelly or jam as from one medium-sized baked potato.

Jams and jellies are generally used as spreads for bread and in these days of butter and other fat rationing, many persons have doubtless been using jam or jelly to spare the butter or margarine. Nutritionally, this is not entirely sound practice, because jam can not take the place of necessary fat. It can add flavor, which is important, especially for wartime meals that may become rather monotonous. Flavoring, like seasoning, however, should be done artistically, and not overdone.

Science News Letter, November 6, 1943

PHYSICS

Newly Designed Card Game Teaches Students Physics

► WORK is sugar-coated for physics students in a new card game designed by Prof. R. I. Edwards, physicist at Miami University at Oxford, Ohio. The game embodies all the elements of an honest-to-goodness card game (including bluffing) but at the same time gives the players a stiff workout in recognition and identity of physical dimensions and fundamental constants.

As explained by Professor Edwards in the new issue of the *American Journal of Physics* (October), the deck consists of 126 cards divided into 21 categories of six cards each, no two of which are alike. The first 20 categories are physical dimensions such as length, mass, force and pressure; the twenty-first is a category of six fundamental constants, such as the velocity of light, the Avogadro number or the charge of an electron.

From two to eight players are needed for the game, and the trick consists of knowing physics formulae and categories well enough to identify them at sight, or within five seconds, the maximum concentration period permitted.

As in a good old-fashioned card game, the sporting angle of this version consists of the traditional "bluff." But there is a catch. To call an opponent's bluff, the challenger must be up on his physics, as the burden is then on him to give the correct category and properly identify the card in question within five seconds. Simple, if you know how. And such fun for the physicists!

Science News Letter, November 6, 1943

IN SCIENCE

CHEMISTRY

Glass Fibers Reinforce Plastics Used in Aircraft

► GLASS FIBER is now being used to reinforce plastics employed in aircraft construction, Games Slayter, of the Owens-Corning Fiberglas Corporation, announced at a recent meeting of the American Institute of Mining and Metallurgical Engineers in Wilmington, Del. The plastic with fiber glass reinforcement has strength in proportion to its weight hitherto unattainable.

The new material has been produced in samples with tensile strength of over 80,000 pounds per square inch. It can be molded into aircraft structural parts with low pressures and without the use of expensive molds. The material can be machined and has the dimensional stability of metals.

Science News Letter, November 6, 1943

METEOROLOGY

Daily U. S. Weather Map To Be Distributed Again

► THE DAILY weather map, with its old familiar isobars and isotherms, plus the newer symbols indicating the location of fronts and air masses, will soon be available again, the U. S. Weather Bureau has announced.

Various questions have been cleared up with Army and Navy authorities. It is felt that with recent easing in the U-boat situation, weather information can be distributed in this way, as well as through press and radio, without giving out information useful to the enemy. Should Dr. Goebbels make good his recent threats to loose a full fury of wolf-pack attacks, it might become necessary to renew the restrictions; but at present this does not appear to be too serious a prospect.

Return of more detailed and easily accessible weather information is welcomed especially because of the approach of winter, which enhances the value of full warning of such things as blizzards and cold waves to people in general, and to shippers, fuel merchants, snow-clearing crews, and Southern orchardists and truck farmers in particular.

Science News Letter, November 6, 1943

NE FIELDS

METALLURGY

New Heat-Resistant Alloy Uses Little Scarce Metals

► DEVELOPMENT of an "emergency" heat-resistant alloy has been disclosed in a report by Oscar E. Harder, assistant director, and James T. Gow, assistant supervisor of Battelle Memorial Institute, Columbus, Ohio, to the convention of the American Society for Metals in Chicago.

This alloy is low in nickel and chromium, two of the metals high on the wartime scarcity list. After a laboratory study of nearly 100 alloy compositions, the two metallurgists report finding a heat-resistant alloy that possesses adequate toughness for handling in the foundry and low enough in hardness to be machinable.

The new metal can be used at temperatures up to 1,400 degrees Fahrenheit. The best results have been found with an alloy containing 0.30% to 0.35% carbon, about 2% silicon, with 10% to 12% chromium, nickel in the range of 4% to 10%, manganese in the range of 2% to 12%, with the nickel and manganese supplementing each other and used in amounts to produce an alloy which is ductile and adequately resistant to corrosion and heat.

The new alloy retains its strength and pliability on aging and does not become too hard and dangerously brittle, nor does it soften up.

Balancing the amount of nickel and manganese against the chromium content seems to be the most important requirement for obtaining a heat-resistant alloy of this type.

Science News Letter, November 6, 1943

METALLURGY

Method for Direct Rolling Of Molten Metals Patented

► ELIMINATION of the slab or bloom stage in rolling-mill operation is the objective of an invention by Adolphe Schwarz of Baden, Switzerland, to whom patent 2,332,759 has been granted. He proposes to flow molten metal directly from the furnace between the rolls, to produce sheets, beams, rails and other shapes.

The metal, Mr. Schwartz explains, is to

be sent between the rolls at a temperature just above its solidifying point, and worked while its exterior is somewhat doughy and its interior still fluid. This kind of process has been proposed before, but attempts at application have not succeeded because rolls operating at constant speed have at times pulled the metal too thin, and at others have permitted it to pile up. He overcomes these difficulties by means of a set of electrical controls which automatically keep the rolls turning at the correct rate to handle the mass of material present between them at any moment.

Science News Letter, November 6, 1943

MEDICINE

New Flu Serum Vapor Is Inhaled Into the Lungs

See Front Cover

► THE NAVY MEN breathing from the tank pictured on the cover of this SCIENCE NEWS LETTER are an experimental group in Seattle, Wash., testing the value on human subjects of the new serum vapor against influenza. The serum was developed by a group of officers in the Navy Laboratory Research Unit No. 1 at the University of California in Berkeley, Calif.

Earlier experiments on animals were successful, and it is now hoped that the group immunization method will be successful in preventing influenza among men in the armed services.

The cover picture is an official U. S. Navy photograph.

Science News Letter, November 6, 1943

ZOOLOGY

Coyote Outruns Auto In 47-Minute Chase

► COYOTES are noted for their speed and endurance in running but what is believed to be a new record is reported by R. Scott Zimmerman of the U. S. Fish and Wildlife Service.

A party of four men, driving in a light car across the desert floor of an ancient lake bed, flushed a coyote and gave chase. The animal, a two-year-old in prime condition, during one straight-away dash reached a speed of 43 miles an hour as indicated on the car's speedometer.

Turning, doubling and dodging, it led the wheeled pursuers for a chase lasting 47 minutes before it was overtaken and killed.

Science News Letter, November 6, 1943

METALLURGY

Safety Method Devised For Grinding Light Metals

► A SAFETY METHOD for grinding and machining light metals like aluminum and magnesium, to minimize fire hazard from their accumulated dust and fine chips, is the subject of patent 2,331,876, obtained by H. J. Walpole of Grantwood, N. J., and assigned by him to the Bendix Aviation Corporation.

As the workman stands at his grinding-wheel or lathe, a jet of air plays over his hands and the metal object under work, blowing all particles down into a trough underneath. A hood over the top furnishes further protection. A blower sucks all particles through a conduit and past a series of gas flames, that burn them as fast as they come, thereby rendering them harmless.

Science News Letter, November 6, 1943

INVENTION

Newly Invented Briefcase Has Double Slide Fastener

► THE WAR can not be run without briefcases—as a moment on any Washington, D. C., street will abundantly witness. Slide fasteners make excellent closures for briefcases and similar containers, but their use necessitates double handles, which many persons do not like. Jacob Roth of Brooklyn has solved this very neatly. He supports the case on a solid partition through the center, with the handle at its upper edge. On either side of this is a slide fastener, so that the result is a double briefcase, each half wholly independent of the other. The invention is protected by patent 2,332,757.

Science News Letter, November 6, 1943

CHEMISTRY

German-Born Chemist Selected to Receive Medal

► DR. JOHN J. GREBE, of the Dow Chemical Company, will receive the Chemical Industry Medal awarded by the Society of Chemical Industry. This medal is given for outstanding achievements in the application of chemical research to industry.

Dr. Grebe was born in Germany 44 years ago and came to this country in 1914. His notable work relates to the solution of problems connected with the automatic control of chemical reactions.

Science News Letter, November 6, 1943

HANDCRAFT

Christmas Gifts to Make

Construct doll carriage, decorative door stop, steam-driven PT boat or glass-bead microscope in your workshop at home from easily obtained materials.

By JOSEPH H. KRAUS

► THIS CHRISTMAS season will find store shelves bare of many gifts we would like to give. Makers of toys and luxury gifts especially have turned to more serious business. But similar gifts can be made at home that are, in addition, useful scientific exercises in the use of tools and explain scientific principles.

For little sister, a doll carriage can be made almost entirely from odds and ends of wood. Tack together two boards 28 inches long and 8 inches wide so both of them can be shaped at the same time. An ordinary straight saw and a little work with a knife or rasp will shape the sides as shown in the diagram. Use a jig or band saw if you have one available. When the job is completed, separate the pieces which are to form the sides.

The doll carriage should be 12 inches wide. The inside compartment is made of three pieces of wood arranged as shown in the diagram and nailed in place.

The springs are constructed from egg box wood. Make about six strips one-and-one-quarter inches wide. Soak them in water. Apply a water soluble glue to them. Place one strip on top of the other and bend into a form made by driving nails into a board. The diagram also illustrates how this is done. A single egg box strip will not be long enough, so add another to it, making the ends abut. Be sure that the joint of one strip does not meet a joint in the other strip. Set these springs aside in the form for at least three days to dry thoroughly.

The axles are ordinary half-inch dowel rods which are nailed to wooden strips three inches wide. A spool such as is used for heavy cord is cut in half and the halves are used as bearings for the wheels. If you can't get spools perhaps you have a friend who would turn them on a lathe. The wheels are turned from wood or may be made from small peach basket bottoms sanded on the face and edges. These wheels run on the wooden spool bearings as illustrated. A cotter pin or a bent nail passing through a hole in the wooden axle prevents the wheels

from coming off. Oil put on the bearing parts will make the wheels turn more easily.

The handles of the doll carriage are made in forms just as were the springs. These are $\frac{3}{8}$ -inch dowels soaked in hot water and bent. The handles are attached to the sides of the carriage by straps of tin cut from an old can. Better straps, called B-X cable straps or pipe straps, are available for a few cents from any hardware store. The cross-bar is a broomstick drilled so that the two side bars can be inserted.

The hood of the carriage can be made either from wooden hoops shaped from an old egg box or they can be formed from discarded wire coat hangers. The covering of the hood is any suitable material. A small hem should be sewed to cover the first hoop. The middle hoop may be attached and held in position with a few stitches. If the hoops are of wire, small eyes are turned in the lower ends to encircle a short bolt or wing nut.

The entire carriage should be lined with some soft material like cotton and covered with fabric or cloth which should extend one inch over the outside edges. Imitation tufting can be produced by tacking ornamental nails here and there on the inside.

The whole carriage should then be

given one or two coats of paint. Imitation wheel spokes should be painted on the wooden disks.

Mother or sister would like the decorative door stop shown in the diagram. Any girl can easily make it. Mount a doll's head on a cork, and fit it into a bottle filled with sand. Now make a flowing gown attached around the neck of the doll head which is long enough to cover the bottle. The waist of the figure can be tied securely to the bottle. Instead of using a ready-made doll's head you can model one yourself out of clay, bake it in the oven, and then paint on the features. Or try making a cloth head, such as from the end of a child's stocking. A face can be outlined with colorful thread.

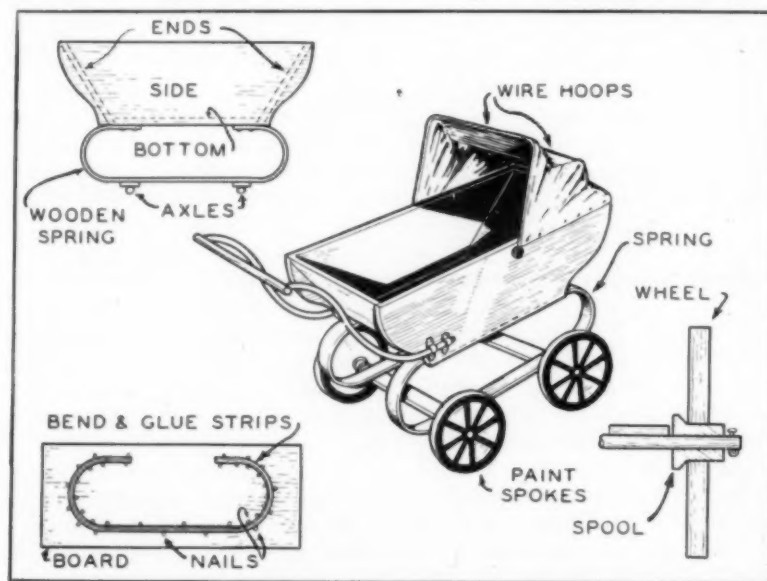
This makes an ornamental, well-weighted door stop for the bedroom or elsewhere in the home.

Make a PT Boat

It's fun to build a steam-driven PT boat that would delight any boy.

The illustration represents a boat approximately 15 inches long made from a piece of two-inch by four-inch lumber. On this board roughly sketch the shape of the hull; then drill a series of holes as illustrated at C. Either a small drill as shown in the diagram or a much larger one can be used. After drilling the holes, remove the center area of the wooden block. Clean up with chisel or rasp.

Now cut the outside approximately to shape. Gently slope the sides inward





We kept this secret 25 years

It is, in principle, an amazingly simple device. It is smaller than a bass drum, light enough so one man can lift it, and it looks rather like an overcomplicated fan.

Yet, connected to a plane's engine, it can hoist a plane more than *seven miles* up, where few planes in the world can fly without its help.

And it belongs to America!

It is the turbosupercharger. Driven by the engines' once-wasted exhaust gases, it crams precious oxygen into the carburetors to give American bomber and fighter planes full fighting power as they fly through the stratosphere—out of sight, almost out of reach of any enemy.

For 25 years the development of the

turbosupercharger, and the materials and ways to build it, have been the secret of General Electric engineers and scientists, and of the Army Air Forces engineers who worked with them. They kept on when there seemed little prospect of success. Tremendous difficulties had to be overcome—for one end of the device operates at 67 below zero, the other, only inches away, operates at temperatures up to 1500 degrees, and the whole spins at speeds greater than 20,000 revolutions a minute!

It was a tough job, but it was done. Today all turbosuperchargers for U.S. planes are made either by General Electric or according to G.E. designs. And these turbosupercharged planes are making history.

The story of the turbosupercharger is one more proof that America can count on her scientists, working with military men, to provide our fighting men with every advantage that new and better war equipment can give. And *you* can depend on these same scientists, after the war is over, to work with the same industry and enthusiasm to develop new and better products for peacetime living, and to find ways to make these products cost less so that everyone can enjoy them. General Electric Co., Schenectady, N.Y.

★ ★ ★

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and downward until you get a construction that somewhat resembles a boat. Lightly tack a piece of wood $\frac{1}{4}$ -inch thick to the bottom of the boat and continue the shaving and sanding operations. Now make a deck piece to fit the top of the boat and drill two holes in this so that the deck and superstructure will fit on the two flat staffs made from nails at the front and rear.

Cut blocks of wood similar to D and E to represent the superstructure and whittle two pieces of broomstick, as shown at F, to represent the anti-aircraft gun turrets. Glue and nail these pieces to the top. A cold casein glue is best. The four torpedo tubes can be made from dowels or wire package handles.

Paint All the Parts

Give all of the parts a coat of paint, perhaps battleship gray, and let the parts dry. Then paint the inside of the bottom and the bottom of block C again, and while the paint is still wet, nail these parts together. Apply a thick coat of paint along the inside seams and set aside to dry.

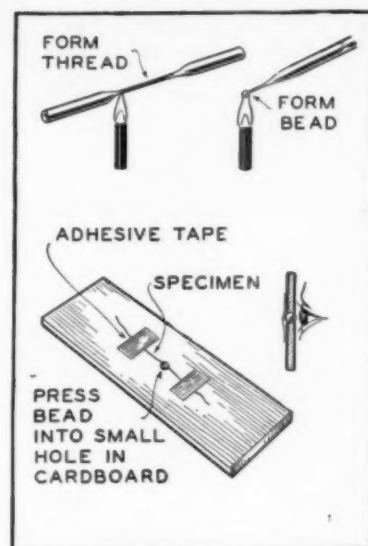
One of the simplest of steam power drives can be made from a small tomato paste can. When opening such a can, punch a small hole through the top near one edge. Shake out the contents and

wash out the inside of the can by submerging it in a bowl of water and squeezing the sides. This causes the air bubbles to escape and water to enter.

After the can is clean, solder a small piece of copper tubing about $\frac{1}{8}$ -inch wide inside the hole in the can. Bend another piece of copper tubing, approximately as shown in the diagram and flare the upper end. You can get a short length of such a tube from the local garage man's junk pile. The flare on the end can be made with a flaring tool or the end can be enlarged by using a punch or working a nail introduced at an angle around the copper tubing.

If the copper tube refuses to yield, heat it red hot in the flame of a gas stove, plunge immediately into cold water to soften it again and repeat the manipulations.

Pass the tube through a hole near the bottom of the stern of the boat. Now arrange the can on a small wire or tin support. A piece of tin cut from a can should be bent into a square U shape. Semi-circular cuts of the proper size to hold the boiler should be made. The fuel



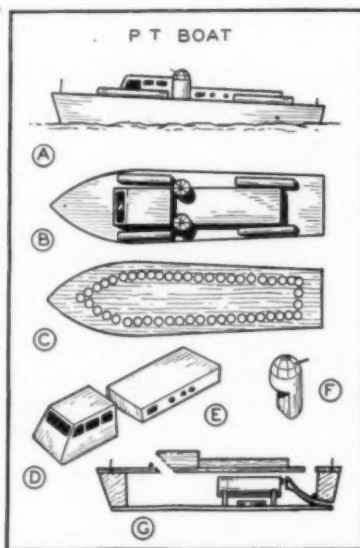
container is a cap from an old preserve jar. The inside of the boat should be lined with sheet asbestos.

In operation, the can is half filled with hot water. No more than a half teaspoonful of solid alcohol which can be bought at the 5-and-10-cent store is put in the cover. Light the fuel and when the water boils, the steam will be driven into the copper pipe. In doing so, the steam will carry some air down with it. This steam and air mixture drives the boat forward, though probably at a very slow speed.

Supply Ballast

This boat will require some sort of a ballast to settle it well in the water. For ballast you can use stones, sand or a handful of old nails. Note also that you will have to build up around the copper pipe with white lead, putty or thick paint to eliminate any leakage at this point.

If alcohol is to be used as a fuel, ven-



OVERSEAS

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tilation must be provided. This is best accomplished by cutting a hole from the cabin window to the interior and cutting a vent at the rear as illustrated at G.

The diagrams at A and B show the side and top views of the boat. Windows are made with black paint at the appropriate places or by sticking pieces of cellophane or celluloid directly to the side of the ship with glue. The lines on the anti-aircraft gun turrets are ruled with a black pencil and the anti-aircraft gun is an ordinary finishing nail driven into the wood. The head is cut off and the end is filed straight. The PT boat is now ready for its trial excursion.

Homemade Microscope

A grain of pollen, a moth's wing or a fly's leg may be greatly magnified by means of a microscope which you can make at home. The only materials required to make this microscope, which is really a very powerful magnifying glass, are a piece of glass tubing and a Bunsen burner. The flame of an ordinary kitchen gas range may also be used.

If you have a broken glass drinking straw, hold an end with the fingers of each hand so that the center is directly over one of the flames of the gas range or Bunsen burner. Rotate the tube until the part above the flame gets hot and soft. Remove the tube from over the flame and immediately pull both ends apart. This will produce an extremely fine thread of glass.

Break the thread in the middle with your fingers and insert the tip of the glass thread in the flame. Break off the tiny bead which forms on the end. Make other beads in a similar fashion.

Make a Pin Hole

Cut some cardboard from a stiff shoe or candy box into strips measuring about one by three inches. In the center of each strip punch a pin hole. Make sure that the hole is perfectly clean when you look through it. Now insert one of the glass beads you have just made into the hole in the cardboard, pushing it about flush with the cardboard itself. If the bead is tipped, have the tip extend sideways.

You now have a very powerful magnifier with which tiny objects will be enlarged greatly. Attach an animal hair to the back of the cardboard with a piece of adhesive tape. Scotch tape will be found excellent for this purpose. Stretch it directly across the center of the bead and fasten it down at the other end. Now look at the hair. In a similar way attach a fly's wing, leg or other parts of

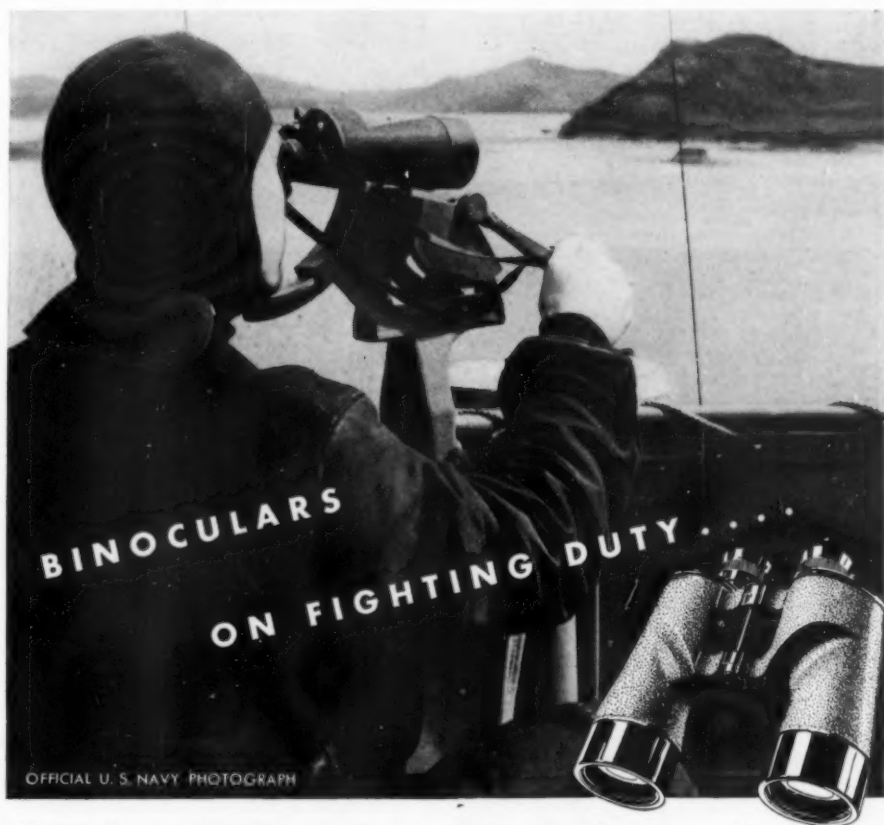
the fly's anatomy to the back of the cardboard. Make an infusion of hay or grass, a lettuce leaf or a banana skin by putting a teaspoonful of the material in a glass of water and setting it aside for a week or ten days. Remove a single drop of the mixture with an eye dropper and apply it directly to the lens.

If tiny slipper-shaped animals such as are found in stagnant waters are present and if your lens has the proper focus, you will see tiny creatures moving back and forth across your line of vision. You should treat several of the beads in this

way to select the one which gives you the best results.

You can use this microscope to examine the pollen grains which cause hay fever; to study the mold on bread, specimens of flour and face powders. Many permanent slides may be made by attaching the specimens directly to the cards. Use celluloid cement for small objects. It will not hurt if cement is applied directly to the lens. In this case the object should be imbedded in the cement immediately.

Science News Letter, November 6, 1943



"Fishing Craft anchored in harbor..."



Joe Miller sees every detail of that coastal harbor—clearly, sharply. He knows that the lives of his fellow seamen depend upon the accuracy of his observations. That's why Joe is using a Bausch & Lomb Binocular—built especially for the Navy. It must provide clear images through haze and rain—it must be rugged, water-proof, dust-proof. To thousands of seamen like Joe Miller, Bausch & Lomb Binoculars are the eyes that never fail their trust.

The United States Navy urgently needs every Bausch & Lomb 6x30 or 7x50 glass available. Bausch & Lomb production is on a twenty-four hour schedule—tremen-

dously increased over even a year ago. But there is no limit to the usefulness of these Binoculars in Navy work—there cannot be enough. So, if you have such a glass, send it to Naval Observatory, Washington, D. C., with your name and address attached. Don't delay—send your Binoculars on active duty now.

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PUBLIC HEALTH

Emotional Constitution Is Important Part of Health

► DOCTORS and nurses and hospitals and health departments can help us to be healthy, just as schools and teachers can help us to be educated. These aids to health and education, however, are of no use without suitable raw materials, any more than an airplane or tank factory is useful without suitable raw materials from which to make planes and tanks.

The raw material for health is described by Dr. Dwight O'Hara, professor of preventive medicine in Tufts College Medical School, in his new book, *Air-Borne Infection*, published by the Commonwealth Fund. Like a good New Englander, Dr. O'Hara sees the raw material for health integrated into

a diagrammatic pie. He admits that even a New Englander's idea of how to cut a pie might be faulty, but as he sees it, this health pie divides into three large sections. Each section represents one of the raw materials of health.

One section of the health pie is the biologic constitution. This is the raw material from which a person draws ability to resist privation, germ invasion, poisonous substances, and time or the effects of advancing years.

Second section of the health pie is the emotional constitution. This raw material determines how a person will feel about people and events, how he will behave, his stability under discipline and stress, his personality and his choice of recreation. This last may not seem to you like raw material for health, but through it a person may either add strains to his health or add strength to resist strain.

Third section of the health pie is the living standard. Included in this are housing, medical care, food and drink, and occupation. It is through these factors that efforts to promote health may be and have been made. It is, Dr. O'Hara points out, "the most changeable of all the raw materials of health." He warns that changes in the living standard must be carefully watched, stating that "too much of what is popularly known as the living standard may put a greater load upon the emotional constitution than it can stand."

The constitutional raw materials of health are inborn and it is by them that a person's health most often stands or falls.

Science News Letter, November 6, 1943

CHEMISTRY

Increased Use of Rosin Required of Soap-Makers

► HOUSEWIVES will probably not detect any change in the quality of soap even though domestic non-fat materials, principally rosin, are to be used to a greater extent instead of fats in wartime soap-making. Adjusted soap formulas have been prescribed by the War Food Administration to increase the nation's soap supply by approximately 9% without using additional fats and oils.

A few users of soap may feel that the increased use of rosin and other domestic non-fats as a substitute for such common soap-making materials as palm and coconut oils does tend to make the soap a shade darker. The soap may not lather quite as well as the same brand did formerly and be harder on the hands, but the change will be so slight as to be scarcely noticeable.

The percentage of substitution of rosin and other materials will depend on the type of soap. Some soap chips and granules will contain an extra 15% of rosin and builders, whereas toilet bars are required to increase their use of rosin only 2%.

Rosin, the residue from the distillation of crude oil of turpentine, has long been an important ingredient of yellow household and washing soaps because of its great cleansing quality.

Science News Letter, November 6, 1943

Only about 25% of the crude oil produced now goes into automobile gasoline; increasing amounts go into high-octane fuel for warplanes, toluene for explosives and butadiene for synthetic rubber.

**Letter to a P.O.W.**

WILL YOU WRITE a letter to a Prisoner of War . . . tonight?

Perhaps he was left behind when Bataan fell. Perhaps he had to bail out over Germany. Anyway, he's an American, and he hasn't had a letter in a long, long time.

And when you sit down to write, tell him why you didn't buy your share of War Bonds last pay day—if you didn't.

"Dear Joe," you might say, "the old topcoat was getting kind of threadbare, so I . . ."

No, cross it out. Joe might not understand about the topcoat, especially if he's shivering in a damp Japanese cell.

Let's try again. "Dear Joe, I've been working pretty hard and haven't had a vacation in over a year, so . . ."

Better cross that out, too. They don't ever get vacations where Joe's staying.

Well, what are you waiting for? Go ahead, write the letter to Joe. Try to write it, anyhow.

But mister, or madam, or miss, if somehow you find you can't finish that letter, will you, at least, do this for Joe? Will you up the amount of money you're putting into your Payroll Savings Plan—so that you'll be buying your share of War Bonds from here on in? And will you—for Joe's sake—start doing it right away?

AGRONOMY

NATURE RAMBLINGS

by Frank Thone



The Forgiving Grass

➤ GRASS is the great forgiver. From the time when the first pioneers into the West emerged from the forest lands (which they also destroyed) into the prairies, they have ravaged the sod. They ripped through the long, tenacious cords of its roots (often cursing their toughness the while) with giant plows drawn by many yoke of oxen, later by steam and gasoline tractors. For them there was no virtue in sod, only in quick-cash crops of grain.

A generation of dust-storms and erosion finally brought a tardy awakening, and to some extent at least a return of the saving, protecting sod. Even now, with necessity for larger food supplies becoming urgent, there is a hesitancy about replowing the rebuilt sod.

When the pressure for more grain be-

comes still greater, as it almost inevitably will, are we going to be able to cling to this undoubtedly sound agronomic practice, or will we gamble with the possibility of more dust storms, worse water erosion, in a few years for the sake of more food and industrial alcohol now? It is a difficult dilemma to contemplate.

Fortunately, there may be a way out, without having to choose either of the evil alternatives. The grass itself may be brought to yield the increased supplies of food, through new techniques of harvesting and feeding.

Formerly, about all you could do with grass, beyond immediate pasturing, was to cut and cure it for hay. But in the curing process a large share of the nutritive value of the grass was lost. Hay was considered (and rightly) as not the highest-grade feed possible for livestock.

However, the new knowledge of grass management calls for cutting the crop earlier than would be considered right for hay, while both protein and vitamin contents are at their highest, and while a more appetizing flavor will tempt animals to eat more heartily and hence demand less of expensive "finishing" feeds like oil-cake or alfalfa meal. This young-cut grass may either be put into silos or cured quickly under artificial heat, rather than being slowly dried in the sun, turning tough in the process.

Both these forms of new-grass feed are now highly praised as better balanced meat- and milk-makers than hay, and hence better competitors against the soil-exhausting grain crops in the important matter of net profit per acre.

Science News Letter, November 6, 1943

He urged increased efforts toward cancer control not only in spite of, but because of the war.

An average of 22 new cancer patients per day were admitted to Veterans' Administration hospitals in 1941, he stated, adding that systematic health supervision and physical examination backed by intelligent educational work among the service forces today should reduce the number of cancer patients a few years hence among veterans of the present war.

Cancer is now included as a subject for formal study in the secondary schools and colleges of Nassau County, N. Y., he reported. Besides this and more generalized educational activities, the Nassau County Cancer Committee has for 15 years conducted a long-range cancer-fighting program involving provision for adequate facilities for diagnosis and treatment of cancer and adequate utilization of these facilities.

Science News Letter, November 6, 1943

INVENTION

New Dust Mop Cleaner Eliminates Shaking the Mop

➤ A DUST MOP CLEANER, recently patented, eliminates the necessity of shaking the mop out of the window. The dusty dust mop is inserted in a box case, agitated mechanically, and the dust drawn by a suction fan into a holding bag similar to those used in vacuum cleaners. In the operation the dust mop is given a gentle beating by an ingenious set of "wipers" or "tongues."

The patent, No. 2,331,457, was granted to Cecil R. Curtis, Los Angeles, Calif.

Science News Letter, November 6, 1943

MEDICINE

Cancer Research

New discoveries in diagnosis and treatment of cancer are predicted. Disease is becoming important in armed forces, particularly among the women.

➤ DISCOVERY of new methods of diagnosis, treatment and possibly prevention of cancer as research increases knowledge of the disease, was predicted by Dr. Clarence C. Little, director of the American Society for the Control of Cancer, at the Wartime Conference of the American Public Health Association in New York.

Island-hopping strategy rather than a single major victory will be the means of conquering cancer, he indicated.

"Because of the breadth of the subject

it is impossible to predict when and how these discoveries will be made," Dr. Little said. "It seems, however, safe to state that there will be many such advances, each marking restricted but definite progress rather than any great outstanding contribution that solves the entire problem of cancer."

Cancer is already appearing among the service forces, particularly breast cancer among service women, J. Lewis Neff, executive secretary of the Nassau County, N. Y., Medical Society, stated.

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• New Machines and Gadgets •

❁ **TRANSPARENT PLASTIC** butter molds with movable push-up bottoms may be used in the household or cafe to form into the conventional butter bar reworked butter, or margarine into which coloring has been worked. An available mold has four compartments.

Science News Letter, November 6, 1943

❁ **BOUNCE** in rubber, plastic and other materials is accurately measured by a new resiliometer, an instrument designed to measure resiliency. It records the rebound of a weighted plunger dropped on the material.

Science News Letter, November 6, 1943

❁ **WORK APRONS** for factory workers and laboratory technicians are now made of a light plastic material which resists cutting oils, mild acids and alkalis. All the desirable qualities of rubber are claimed for this material, which weighs only one-seventh as much.

Science News Letter, November 6, 1943

❁ **PURITY METER**, recently developed, tests the purity of distilled water by measuring its electrical conductivity. It is rapid, practical and easy to operate.

Science News Letter, November 6, 1943

❁ **IDENTIFICATION** marks on persons are now made with a harmless secret, semi-permanent, invisible chemical ink that can be washed off only by the use of another secret chemical. The mark, invisible in ordinary light, gives off an intensive fluorescent glow under a special X-ray light. The photograph

shows the mark on the back of a hand stuck through a dark curtain into the X-ray.

Science News Letter, November 6, 1943

❁ **BY MERELY** applying pressure or squeezing with one hand, a new type fire extinguisher valve is opened and gas discharged. When the pressure is released, the valve closes and the flow of gas ceases. A lever directly over the carrying handle operates this valve, designed for use with portable carbon dioxide fire extinguishers.

Science News Letter, November 6, 1943

❁ **LOW-GLOSS** standards to measure the gloss of fabrics and paper are now available. Sets of 82 panels are calibrated

on the scale defined by the American Society for Testing Materials.

Science News Letter, November 6, 1943

❁ **DRYING** and dehydration may be aided by a direct-fired heater designed to produce temperatures between 150 and 350 degrees Fahrenheit. The heated air is claimed to be free from contamination from the coal, gas or oil fuel used. The new heater employs carbon steel combustion chambers, and a recirculating device allows heated air to be fed back to the heater's intake.

Science News Letter, November 6, 1943

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N. St., N. W., Washington 6, D. C., and ask for Gadget Bulletin 181.

• Just Off the Press •

THE CHEMICAL FRONT—William Haynes—Knopf, 264 p., illus., \$3.

CLEMENTINE IN THE KITCHEN—Phineas Beck—Hastings House, 228 p., illus., \$3.

DATA ON CHEMICALS FOR CERAMIC USE: Formulas, Molecular Weights, Colors, Crystal Forms, Densities, Refractive Indices, Melting Points, Boiling Points, Transition Points, Decomposition Temperatures—Alexander Silverman, and others—Nat. Research Council, 94 p., \$2.50.

EASY MATH: Complete Study Manual of Practical Everyday Mathematics—Bern Williams—Arrow, 64 p., illus., 25c. An elementary book for those who know only how to add, subtract, multiply and divide.

FOOD ENOUGH—John D. Black—Jaques Cattell, 269 p., illus., \$2.50.

KNOWING THE WEATHER—T. Morris Longstreth—Macmillan, 150 p., illus., \$1.69.

MAN AND HIS WORKS—Edward Lee Thorndike—Harvard Univ., 212 p., \$2.50.

MAN IN THE AIR: The Effects of Flying on the Human Body—Herbert S. Zim—Harcourt, Brace, 332 p., illus., \$3.

MARCHING HOME: Complete War and Post-War Handbook for Service Men and Families—Richard Hart—Arco Pub., 182 p., cloth \$2.75, paper \$1.89.

NAVIGATION WRINKLES FOR COMBAT MOTOR BOATS: Geo. W. Rappleyea—Higgins Industries, 108 p., illus., \$1.

POPULAR MECHANICS SHOP NOTES—Pop. Mechanics, 224 p., illus., 50c., Vol. 40, 1944.

RADIO DEVELOPMENT IN A SMALL CITY SCHOOL SYSTEM—Lola Berry—Meador, 126 p., \$1.50.

A SHORT COURSE IN QUANTITATIVE ANALYSIS—J. F. Flagg, H. H. Willard, N.

H. Furman—Van Nostrand, 253 p., illus., \$2.50.

THE U. S.-CANADIAN NORTHWEST: A Demonstration Area for International Post-war Planning and Development—B. H. Kizer—Princeton Univ., 71 p., illus., \$1.

"WHERE'S SAMMY?": The Story of an Ace News Photographer—Sammy Schulman, ed. by Robert Considine—Random House, 234 p., illus., \$2.59.

WOMEN IN WARTIME—Institute for Psychoanalysis, 41 p., 35c.

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